July 13, 1954 A. E. JACKMAN 2,683,489

TRAVELING CUTTER

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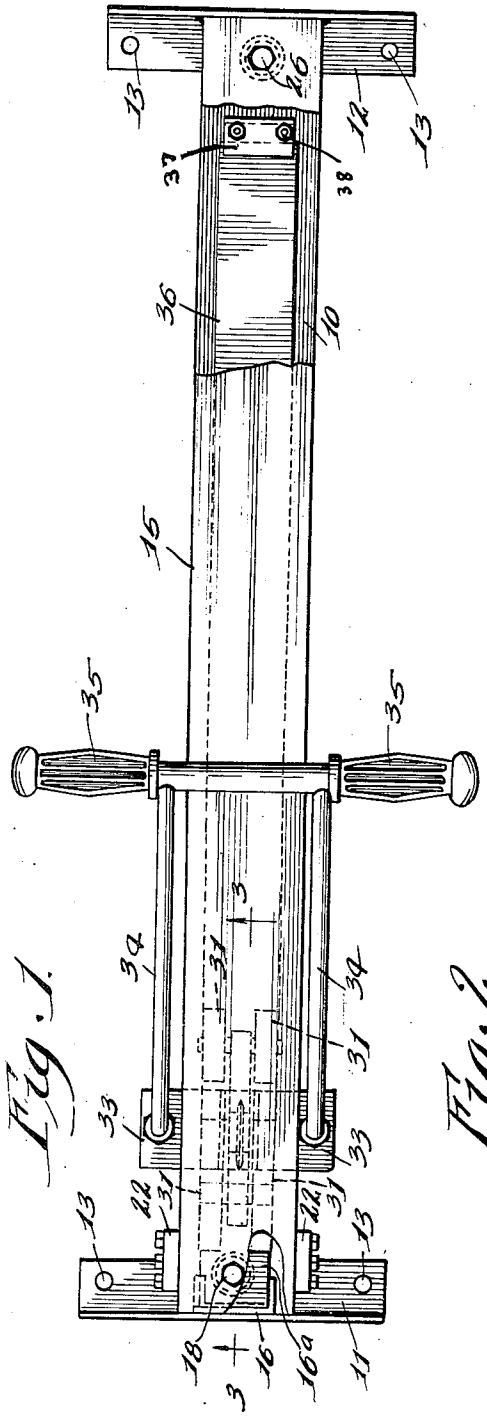


Fig. 1.

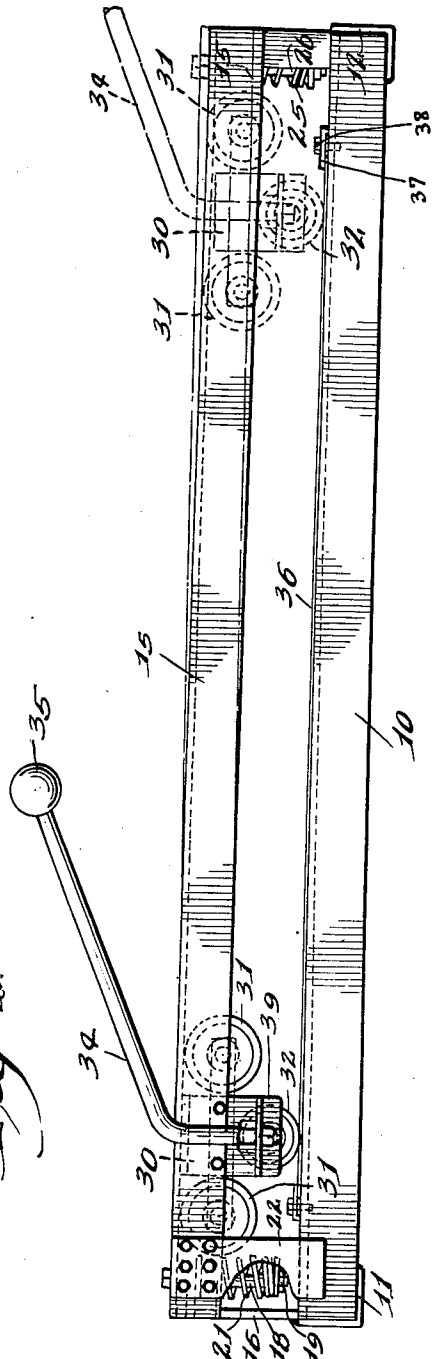


Fig. 2.

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Fig. 3.

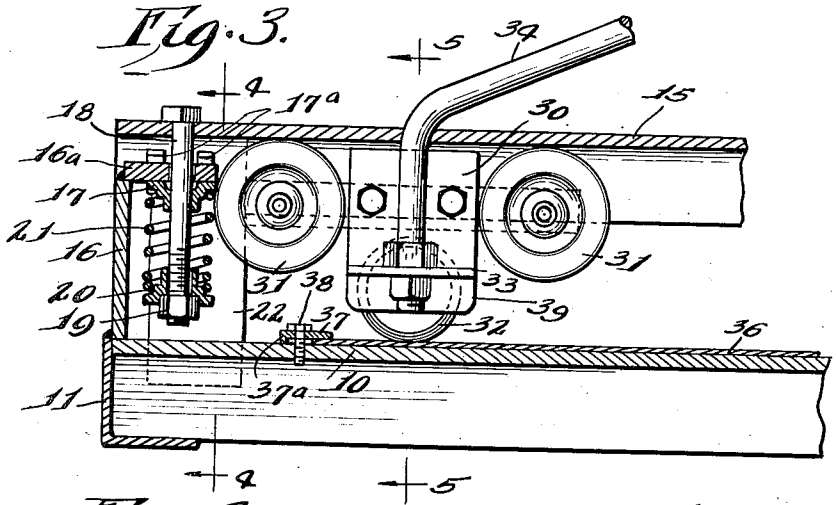


Fig. 4.

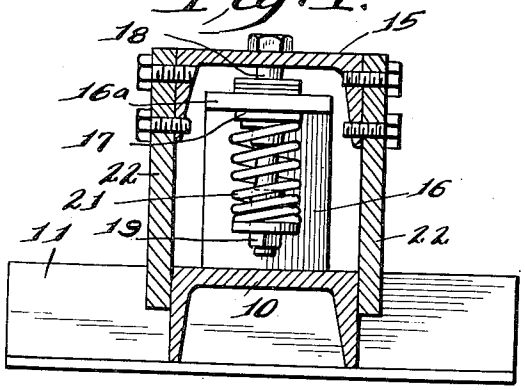


Fig. 5.

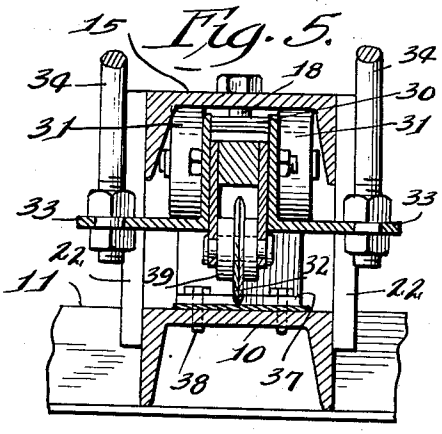
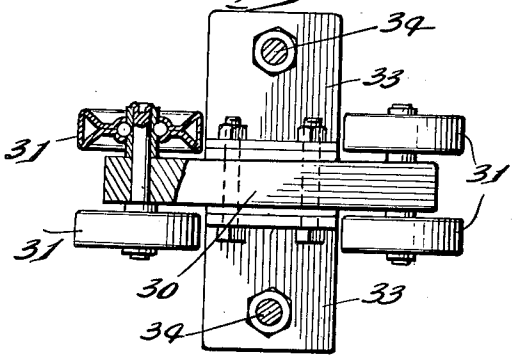


Fig. 6.



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TRAVELING CUTTER

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2 Claims. (Cl. 164—77)

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This invention relates to a cutter, and more particularly to a cutter for fibrous material, as heavy grainless paper.

One feature of the invention is that it provides an improved cutter; another feature of the invention is that it provides a cutter having yieldable means for supporting a frame on a cutting bed in spaced relationship thereto for movement toward and away from said bed, said means exerting a yieldable pressure to move the frame toward the bed to provide cutting pressure, and cutting means comprising a cutting wheel on the frame and movable therealong to cut material on the bed; a further feature of the invention is that the yieldable cutting pressure is provided by spring means connected between the bed and the frame at two opposite ends thereof; still another feature of the invention is that stop means are provided at each of said ends for limiting the movement of said frame toward said bed to maintain the parts in spaced, generally parallel relationship; still a further feature of the invention is that the movable cutting wheel is provided with an apron which partially encases said wheel to protect the operator of the cutter from being cut by said wheel, and the wheel may deliberately be made dull edged to insure such protection without impairing the efficiency of the device, since the wheel bruises or crushes the paper apart rather than slicing it apart; an additional feature of the invention is that it provides a wear plate of softer material than the cutting means adjustably mounted on the cutter bed for movement transversely of the direction of movement of the cutting means to maintain a smooth cutting surface; and still a further feature of the invention is that the cutter is composed largely of standard, readily obtainable component parts.

Other features and advantages of the invention will be apparent from the following description and from the drawings, in which:

Fig. 1 is a plan view of the cutter, part of the upper frame being broken away and underlying structure being shown in broken lines;

Fig. 2 is a side elevational view, partly in section, with the parts shown in one position in solid lines and in another position in dashed lines;

Fig. 3 is an enlarged fragmentary longitudinal section along the line 3—3 of Fig. 1;

Fig. 4 is a transverse section along the line 4—4 of Fig. 3;

Fig. 5 is a transverse section along the line 5—5 of Fig. 3; and

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Fig. 6 is a fragmentary horizontal section taken just above the movable carriage.

The cutter which embodies my invention is particularly designed for cutting thick fibrous material, as for example, heavy grainless paper; and the cutter may also be used for cutting other types of paper as well as fabrics, plastics, etc. It is very difficult to cut such materials by means of shears or by means of cutters having a pivoted blade or a so-called "guillotine" blade because such cutters tear the grainless material in all directions and do not make a clean cut.

The cutter comprises an elongated horizontally disposed cutting bed 10 formed from a channel iron having angle irons 11 and 12 welded or otherwise secured to the ends to form a secure base. The angle irons 11 and 12 may be provided with holes 13 by means of which the cutter may be bolted or otherwise secured to a table or other surface.

An elongated frame 15 is formed from a similar channel iron, the arms of the channel iron providing guide means extending longitudinally of the frame. Yieldable means are connected to the cutter bed 10 and to the frame 15 for supporting the frame on the bed in spaced relationship thereto. At one end of the device a bracket 16 is welded or otherwise secured to the bed 10 and extends upwardly therefrom. A horizontally extending flange 16a at the top of this bracket carries a spider 17, and a bolt 18 is passed through coaxial openings in the flange 16a, the spider 17 and the frame 15 and has its head engaging the top surface of the frame 15. The threaded bottom end of the bolt carries a nut 19 which supports a shouldered washer or spider 20, and a compression spring 21 surrounds the bolt 18 and is seated at its respective ends on the spiders 17 and 20. At opposite sides of the frame 15, guide plates 22 are bolted, and these plates extend down below the upper surface of the cutting bed to prevent transverse movement of the frame 15 with respect to the bed 10. At the other end the frame 15 is similarly yieldably secured to the cutter bed 10 by means of a spring 25 surrounding a bolt 26. The springs 21 and 25 exert yieldable pressure to move the frame toward the bed to provide cutting pressure in the operation of the device. Stop means at each end of the device limit the movement of the frame toward the bed. As shown in Fig. 3 this means may comprise threaded studs 17a which may be formed integrally with the spider 17. In Fig. 2, the left hand end of the frame 15 is shown as being forced above its lower-most position by the car-

riage and cutter wheel assembly, while the right hand end of the frame is shown in solid lines in its lower-most position where its movement is limited by stop means similar to those shown in Fig. 3. If the carriage were moved to its position as shown in dashed lines in Fig. 2, the right hand of the frame would be moved to its dashed position out of engagement with the stop means.

Cutting means are mounted on the frame and are movable therealong to cut material on the bed **10**. The cutting means comprise a carriage **30** having rollers **31** at each end thereof. These rollers preferably are of the ball-bearing type as shown in Fig. 6 and may comprise pairs of roller skate wheels which engage the guide means formed by the channel arms of the frame **15**. A cutting wheel **32**, is rotatably mounted on the carriage **30** and is arranged to engage the bed **10** to lift the frame **15** off the stop means **17***a*, as is shown in Fig. 3, to insure that yieldable cutting pressure is provided. Extending from either side of the carriage are horizontal flanges **33** from which extend bars **34** having handles **35** mounted thereon to provide a means for moving the carriage along the guide means of the frame **15** to cause the cutting wheel **32** to cut material on the bed **10**. The carriage and cutting wheel may be moved throughout substantially the entire length of the device as indicated in Fig. 2. The cutting wheel may deliberately be made dull without impairing the efficiency of the device, since the wheel bruises or crushes the paper apart rather than slicing it. A dull wheel will perform the cutting operation just as efficiently as a sharp wheel, and the narrow edge of a sharp wheel would wear down much faster than the relatively broad edge of a dull wheel.

In order to maintain a smooth cutting surface a wear plate **36** is adjustably mounted on the cutting bed. The wear plate comprises a sheet of material (preferably metal) which is softer than the cutting wheel **32**, and which is mounted by means of clamping blocks **37** at each end of the bed **10**. Each clamping block has a transversely extending foot **37***a* adapted to engage the bed, and the other end of each block may be forced down to clamp the wear plate in position by means of a stud **38** which is threaded into the upper surface of the bed **10**. During use the relatively hard cutting wheel will tend to groove the relatively soft wear plate, and the studs **38** may be loosened so that the wear plate may be moved slightly in a direction transverse of the cutting bed to maintain a smooth cutting surface. When it is desired, the wear plate may be discarded and a new wear plate may be secured in place by the studs **38**.

In the operation of the device, the material to be cut is placed on the cutting bed and the carriage **30** is moved from one end of the device to the other end by means of the handle **35** to cut the material. The springs **21** and **25** exert yieldable pressure to provide controlled cutting pressure, and it is not necessary for the operator to exert any cutting pressure whatsoever. Because of this feature, a mechanical drive arrangement may readily be substituted for the manually hand-operated handle **35** and the carriage may be driven automatically by a belt or by electric or hydraulic power, for example.

Another feature of the invention is that it provides protective means for the operator. As shown in Fig. 3, an apron **39** partially encases the cutting wheel. Should the operator inadvertently place his finger in the path of the wheel, the finger will be merely pushed or squeezed by the apron and will not be cut by the cutting wheel, particularly if the wheel is deliberately made dull, as is preferred.

Another feature of the invention is that it does not require a large number of specially made parts, but may be assembled from parts which are readily commercially obtainable. For example, the frame and the cutter bed are made from readily obtainable channel irons; the wear plate may be made from a base of soft metal sheet; the handle assembly may be made from readily available rod stock, and the rollers on the carriage may comprise roller skate wheels.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. A cutter adapted to sever material by a rotating crushing action of a rotatable cutter wheel against a bed, comprising: an elongated bed member; an elongated frame arranged approximately parallel thereto and movable toward and away from said bed member; a movable carriage positioned between the frame and bed member and bearing against the frame member, the carriage including a pair of laterally spaced rollers bearing outwardly against the inner surface of the frame and a rotatable cutter wheel on the carriage adapted to bear outwardly against the inner surface of said bed member, said rollers being substantially parallel to each other and being arranged on opposite sides of the cutter wheel to prevent substantial angular displacement of the wheel with respect to the bed member; yielding means urging the frame toward the bed member to press the cutter wheel against the bed member; and guide means for guiding the movement of the carriage during its travel between the frame and bed member, said guide means include substantially parallel side flanges on the frame extending toward the bed member and within which the rollers are positioned with said flanges having at least portions of their inner surfaces bearing against outer side portions of said rollers.

2. A cutter adapted to sever material by a rotating crushing action of a rotatable cutter wheel against a bed, comprising: an elongated bed member; an elongated frame arranged approximately parallel thereto and movable toward and away from said bed member, the frame and bed member each having a flat surface arranged substantially parallel to the other flat surface, said frame having substantially parallel side flanges extending toward the bed member; a movable carriage positioned between the frame and bed member and including two pairs of laterally spaced rollers bearing outwardly against said flat surface of the frame with the rollers of each pair being substantially parallel to each other and a rotatable cutter wheel adapted to bear outwardly against said flat surface of said bed member, said rollers being arranged on opposite sides of the cutter wheel to prevent substantial angular displacement of the wheel with respect to the bed member and one pair of rollers being positioned forwardly of the cutter wheel and the other pair rearwardly thereof to give stability thereto, said frame flanges having at least portions of their inner surfaces bearing

against outer side portions of the rollers to guide said carriage and thus the cutter wheel for movement in a substantially straight line; a handle member attached to the carriage and extending upwardly around opposite sides of the frame; and yielding means urging the frame toward the bed member to press the cutter wheel against said flat surface of the bed member.

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